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ABSTRACT

This paper for educational administrators and researchers, and theorists begins with a discussion of the role of intellectual paradigms in the development of science, and outlines some of the general social science paradigms that have been dominant in organization theory. A classification scheme is constructed, based on Udy's organizational subsystems and Buckley's basic sociological paradigms, that allows one to compare and contrast different paradigms. By means of this classification scheme, one can see which areas have been the focus of organization research up to the present, and which have been neglected. Issues that demand further research are set forth. References are given. (Author/VLW)

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SOCIAL SCIENCE PARADIGMS AND THE STUDY OF COMPLEX ORGANIZATIONS

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Introductory Statement

The Center is concerned with the shortcomings of teaching in American schools: the ineffectiveness of many American teachers in promoting achievement of higher cognitive objectives, in engaging their students in the tasks of school learning, and, especially, in serving the needs of students from low-income areas. Of equal concern is the inadequacy of American schools as environments fostering the teachers' own motivations, skills, and professionalism.

The Center employs the resources of the behavioral sciences--theoretical and methodological--in seeking and applying knowledge basic to achievement of its objectives. Analysis of the Center's problem area has resulted in three programs: Heuristic Teaching, Teaching Students from Low-Income Areas, and the Environment for Teaching. Drawing primarily upon psychology and sociology, and also upon economics, political science, and anthropology, the Center has formulated integrated programs of research, development, demonstration, and dissemination in these three areas. In the Heuristic Teaching program, the strategy is to develop a model teacher training system integrating components that dependably enhance teaching skill. In the program on Teaching Students from Low-Income Areas, the strategy is to develop materials and procedures for engaging and motivating such students and their teachers. In the program on Environment for Teaching, the strategy is to develop patterns of school organization and teacher evaluation that will help teachers function more professionally, at higher levels of morale and commitment.

Organizational change is a topic of continuing study at the Center, carried on by a project in the Environment for Teaching program. This paper combines subsystems and basic social science models in a conceptual framework that makes it possible to compare and contrast the major theories of organization analysis.

Contents

Abstract iv
Introduction 1
Toward a Classification of Organizational Paradigms..... 2
The Rational Systems Paradigms..... 5
The Social Process Paradigms..... 8
The Open Systems Paradigms..... 12
Comparing the Basic Paradigms..... 17
Areas that Need Research..... 18
Conclusion..... 21
References..... 22

Abstract

This paper begins with a discussion of the role of intellectual paradigms in the development of science and outlines some of the general social science paradigms that have been dominant in organization theory. A classification scheme is constructed, based on Udy's organizational subsystems and Buckley's basic sociological paradigms, that allows one to compare and contrast different paradigms. By means of this classification scheme, one can see which areas have been the focus of organization research up to the present, and which have been neglected. Issues that demand further research are set forth.

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Introduction

Although the idea of scientific models or paradigms is certainly not new, Thomas Kuhn's The Structure of Scientific Revolutions (1962) has become a benchmark for everyone who studies the history of scientific advancement. Kuhn suggests that scientific enterprises fall within the bounds of certain conceptual frameworks, which he calls "paradigms." According to Kuhn's argument, science advances not by piecemeal accumulation of facts, but by conceptual revolutions, by critical shifts in intellectual frameworks, and by changes in its paradigms.

The paradigm defines and legitimizes the endeavors of scientists working within its bounds. First, the paradigm selects the problems that are critical. The scientific community does not address all problems at once, but instead defines certain issues as critical for the moment, and the paradigm is the determining factor in their selection. Second, the paradigm provides a theoretical framework for addressing the vital problems. It defines those empirical phenomena that are considered significant, and it theoretically describes the behavioral interrelations among those phenomena. Third, the paradigm selects certain types of instruments as valid and appropriate, thus providing the methodological arms for studying the conceptual and theoretical issues. Fourth, the paradigm defines legitimate proof, that is, it specifies the type of experience and empirical phenomena that will be accepted as empirical evidence: not all "facts" are relevant, only those facts that are judged legitimate by the paradigm's conceptual framework. Finally, the paradigm always involves ideological components, emotional attachments, and world views. The scientist adopts a consistent "weltanschauung" that defines his problems, his instruments, his conceptual framework, and his theoretical propositions. More than that, his

very life-style and his emotional commitments may be tied to this interpretation of the world.

The thesis of this paper is that organization theorists have adopted a set of paradigms which direct their research (and which, like sociological paradigms in general, are relatively unsophisticated and lacking in elegance). By studying these crude paradigms we can see how they have highlighted certain fundamental problems and obscured others.

Toward a Classification of Organizational Paradigms

Organizational paradigms are applied to radically different kinds of problems and issues, and it often seems that the various schools within the field are in conflict with each other. However, their "conflict" would be better described as talking past each other. Different schools within the field define their problems differently and address themselves to different clusters of issues; consequently the problems considered critical by one school are virtually ignored by another.

My aim is to construct a conceptual framework for comparing and contrasting the unique features of various organizational paradigms. The traditional labels--"human relations school," "scientific management school," "classical group," and so forth--used to describe different approaches to the study of organizations, tend to obscure the issue, for they blur the distinctions between social scientists whose focal concerns may be very different in spite of apparent similarities. The classification of organizational paradigms presented here does not depend on these commonly used labels. Instead, it is based on two dimensions: (1) a taxonomy of organizational subsystems, and (2) the social science "model" that is usually adopted.

A Taxonomy of Organizational Subsystems

Udy (1965, p. 687) suggests that organizations have three distinct subsystems. His taxonomy makes a good starting point because most organizational paradigms primarily address themselves to one of these subsystems. Udy says:

> An organization was defined as any group of people incumbent to a system of roles purposely designed to yield limited announced

objectives. In turn, the system of roles purposely designed to yield limited announced objectives is referred to as the administrative system of the organization, in contrast to its group structure, the pattern of interactive relationships among members. Any person incumbent to a role in the administrative system and hence interacting in the group structure is designated as a member of the organization, and all members considered severally are referred to as the membership.

Every organization is located in some society, is subject to its social cultural influence, and in turn can influence the society. In this sense, one thinks of any organization as existing within a social setting. Similarly, all organizations, in their activities relative to achieving announced objectives, are subject to the exigencies of the current "state of the arts" and available physical facilities. In this sense, any organization is conceived of as operating in the context of some technology.

Thus, the taxonomy is really in five parts: an internal administrative structure, a peer group structure, individual members, a social setting, and a technology. Udy offers a diagram that incorporates the various elements.

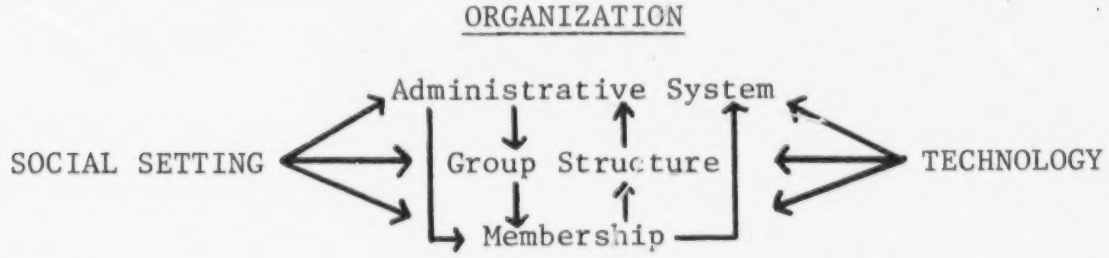

Fig. 1. Udy's taxonomy of organizational subsystems. (From Stanley Udy, Jr., "The Comparative Analysis of Organizations," in James G. March, ed., Handbook of Organizations. Chicago: Rand McNally, 1965. P. 688.)

Social Science Models

Buckley's (1967) excellent discussion of social science models of organizations provides the second dimension of the classification. Buckley argues that there have been three dominant models in general sociology: the mechanistic model, the organic model, and the open systems model. Organization theorists seem to share his perspective although largely unconsciously. The mechanistic model views social behavior as analogous to the action of a machine. Organization theorists using this image of social reality usually focus on efficiency, on the rationalization of work to achieve maximum payoff, and on techniques for cutting costs. The

organic model assumes that organic analogies will help explain social behavior. People using this model have concentrated on social interaction processes in the organization--peer groups, the psychological satisfaction of workers, and morale issues. The open systems model concentrates on the nature of social systems and the cybernetic interrelation of system parts. The theorists working in this framework stress the interaction of the organization with its environment, the structural changes that result from system dynamics, and the organizational processes that convert inputs to outputs.

A Classification of Organizational Paradigms

If we combine Udy's taxonomy of organizational subsystems with Buckley's analysis of sociological models, we can construct a two-dimensional classification system for organizational paradigms (Figure 2).

The history of organization studies dates only from the turn of the century, but during the seventy years that have passed since then several organizational paradigms have been developed, as shown in Figure 2--each with a distinctive set of problems and a particular intellectual heritage. I will not tackle the impossible task of giving an exhaustive historical treatment of these paradigms, but will instead show the general organizational problems that have been studied, sketch the relationships of the paradigms to one another, and name areas that have been seriously neglected.

The following discussion will refer to Figure 2, dealing first with the "rational systems" paradigm and the subgroups under it; next the "social process" paradigm; and finally the "open systems" paradigm. A set of questions is posed for each paradigm:

1. What is the basic model used: mechanistic, organic, or open system?
2. What is the physical analogy used?
3. Where is the critical research focus of the paradigm?
4. How does this paradigm view organizational goals?
5. How does this paradigm deal with organizational change?
6. What dynamic principles, if any, are used by this paradigm to analyze change processes?
7. How does this paradigm deal with relations between the organization and its environment?

BUCKLEY'S SOCIOLOGICAL MODELS

UDY'S ORGANIZATIONAL SUBSYSTEMS

	Rational System (Mechanistic Model)	Social Process (Organic Model)	Open System (Cybernetic Model)
Individual Members		Organizational Psychologists	
Technology	Technological Efficiency	Socio-Technical	Operations Research
Group Structure		Human Relations	
Formal Administrative System	Formal System		
External Social Setting			Environmental Relations

Fig. 2. A classification of organizational paradigms.

A few of the classical writers who adopted each paradigm will be discussed briefly, but since my purpose is to contrast the basic paradigms, not to review the literature, the writers are only included to link the paradigms to concrete research that has been conducted under the paradigms' auspices.

The Rational Systems Paradigms

From the beginning, organization theorists have produced research results that are clearly linked to a rationalistic, mechanistic understanding of social behavior. Some of the most significant work in the field, from Max Weber's to March and Simon's, has relied on the rationalistic paradigm. The rational systems approach argues that the organization is a technical instrument for achieving "functional rationality," that is, for achieving predetermined goals with the maximum efficiency in means. The research focus of these paradigms is the study of structures and work processes that maximize efficiency of operation.[1] The mechanistic analogy is fundamental: the organization is

[1] March and Simon's discussion of "satisficing" decision processes is obviously not a "maximizing" approach. However, their approach is nevertheless a process for improving efficiency--except that they see satisficing processes as the technique instead of maximizing. It still fits roughly within this paradigm.

seen as a well-oiled machine that organizes human labor for the production of a given product or service. For the rational systems theorist the goals of the organization are already predetermined by some higher authority; hence he does not engage in conflicts over goals but rather looks for the most rational structures and the most efficient work routines that will achieve those goals.

In addition, the rationalist theorists assume either that the organization is insulated from its environment, or that the environment is supportive. Although this assumption is rarely made explicit, it is implicitly clear from the fact that environmental questions have been seldom raised by the rationalists.

Finally, by focusing on rational structures and efficient processes, the rationalist theorists have ignored the whole issue of change in the structure of the organization--both the processes of change and their effects. Buckley (1967, p. 9) suggests that the reason for this lack of concern is inherent in the mechanistic approach to social behavior, which always assumes some type of "equilibrium."

> We have at base the concept of "system," of elements of mutual interrelations, which may be in a state of "equilibrium," such that any moderate changes in the elements or their interrelations away from the equilibrium position are counterbalanced by changes tending to restore it.

It is no wonder that an approach which assumes equilibrium, environmental insulation, and predetermined goals has never focused on major change processes.

In sum, the rationalistic approach focuses on the issue of efficiency in achieving predetermined goals. It requires an understanding of what structural and procedural arrangements will improve efficiency and lower costs. It largely ignores dynamic features, and regards environmental relationships as outside its purview. Figure 2 shows two major organizational paradigms in the rationalist column: the "technological efficiency" paradigm, and the "formal system" paradigm.

Rational Systems Paradigm One: Technological Efficiency

One of the earliest attempts to study organizations was made by the Scientific Management school. Its forerunner was the pioneering work of F. W. Taylor (1911). Taylor addressed himself to what Udy calls the

"technological" subsystem of the organization, hoping to rationalize the work habits of workers in industrial organizations; thus his focus on technological problems was related to the individual worker and his capacity to carry out work-related tasks. It is clear that Taylor's dominant sociological image was of a mechanistic model, for essentially he viewed the worker as a machine performing tasks to accomplish predetermined organizational goals. Taylor assumed an essential economic motive in the simple model of the classical economists. With this as his background he undertook to study the physical capacities of the worker for performing technological tasks. Time-and-motion studies were important to Taylor's work and continued to be important to a generation of students who followed in his footsteps. The research done by Taylor and his followers is well known and does not need to be chronicled further here. The point to be taken is that Taylor addressed himself to the technological substem, adopted a mechanistic model, and focused on the rationalization of the organization's work structure. His attention to technological efficiency circumscribed his efforts, blinding him to other issues.

Rational Systems Paradigm Two:
The Formal System

The second major rationalistic paradigm deals with Udy's "administrative" subsystem. There are really two parts to this paradigm. One grew out of the same tradition as Taylor's work and traditionally has been placed under the Scientific Management rubric. Its proponents may be called "prescriptive" theorists because they hoped to identify the most rational and the most efficient ways of arranging organizational administrative structures in order to achieve maximum efficiency.

Gulick and Urwick (1937), in their papers on scientific management, made a series of suggestions about the division of labor within an organization, the span of control, the pyramid of authority, and the principles of specialization. Although they did not address themselves primarily to technological issues, they nevertheless worked within a mechanistic framework. They still saw the organization as an efficient machine, and they viewed their job as making the organization more efficient through the formal administrative structures. In this sense they addressed themselves to a set of

problems, similar to those faced by Taylor and the Scientific Management school, and they used the same mechanistic model. The difference is that these normative writers addressed their advice to the formal system instead of to the technological arrangements. The work of Chester Barnard (1938) is another example of the prescriptive formal system theory.

The second group of theorists using the formal system paradigm might be termed the "descriptive and analytical" group. Instead of prescribing the most efficient means, they sought to describe and analyze the actual structure of the organization. In this sense they were analysts rather than problem solvers. The monumental work of Max Weber (1947) comes to mind. More recent work in the same tradition is exemplified by March and Simon's book on organizations (1959), Kaufman's analysis of the forest service (1960), the article by Scott et al. on authority (1967), and Udy's work on bureaucratic rationality (1959a).

Although Weber and the current generation of formal structuralists differ from the prescriptive theorists in many respects, they do share with them a common concern for the formal system and for a mechanistic interpretation of rational efficiency. The contributions of both the prescriptive and the descriptive approaches are an important segment of the classical study of administrative arrangements in organizations. In fact, the famous Morse-Reimer experiment (1956) was an attempt by a group of formal structuralists to test whether descriptive theories could bridge the gap to normative theories in order to promote system changes in organizational structure.

The Social Process Paradigms

The social process paradigms are particularly concerned with individual motivations, the interaction of group members, and the interaction of peer groups. Whereas the mechanistic model stresses efficiency in reaching the macro-goals of the entire organization, the social process model addresses itself to the micro-goals of peer groups and individuals. The key, then, to understanding this paradigm is that it shifts from problems of efficiency to problems of social process within the organization. Whereas the mechanistic theories focused on the "administrative" and "technological" subsystems, the social process theories focus more attention on the "group" and the "individual."

Social process theory depends on Buckley's organic model of social behavior. Where the mechanistic model adopts the physical analogy of the machine, the organic model adopts the physical analogy of the biological organism. It is a system concept, with discrete parts interacting to maintain the organism. As in the previous model, goals are predetermined: the maintenance of the organism, its survival, and its adaptation to the larger environment.

Turning to the issue of organizational dynamics and change, we find a few differences. Where the mechanistic model assumes some type of mechanical equilibrium, the organic model depends upon some concept of organic "homeostasis," a constant balance among the parts of the system. Thus, the organic model does not allow for any more understanding of change than did the mechanical model, for an assumption of homeostasis means that without outside disturbances the organism will change very little. Consequently, both the mechanical and the organic models allow only for change that impinges from the outside.

Without question, the bulk of the organizational research up to the present has used the social process paradigms. Sociologists and social psychologists followed the lead of Elton Mayo and his followers by devoting monumental efforts to the study of peer groups, individual motivations in organizations, morale issues, work incentives, and leadership training. As Figure 2 shows, three different schools have depended on social process paradigms.

Social Process Paradigm One: The Organizational Psychologists

One major group of organization theorists, the organizational psychologists, has addressed itself primarily to the individual in the organization, and his psychological needs. The work of Chris Argyris (1964) is a prime example. The aim of Argyris and his colleagues is to discover what organizational arrangements enable individuals to achieve "psychological success." The scholars in this tradition claim that the present impersonal and bureaucratic organizational arrangements tend to hinder the psychological development and emotional stability of people working within the bureaucracy. They want to design and formulate plans for bureaucratic systems that will allow

for maximum individual development and the best matching of individual capacities with organizational structures. The sensitivity-training and T-group enterprises of the National Training Laboratories at Bethel, Maine, are further examples of this kind of endeavor (see Bradford, Benne, & Gibb, 1964). The work of Bennis (1966) and Likert (1961) also clearly falls into this group.

The organizational psychologists obviously address themselves to the "individual" subsystem of the organization, and their concern is with social processes within a bureaucracy. To be sure, they are also interested in efficiency, as were the rational structure theorists, but their concern is with the effectiveness of the social processes involved in reaching the multiple goals held by individual members of the organization rather than with technical efficiency in reaching the organization's dominant goals.

Of course, a discussion of individual interactions and needs within the organization must also take account of other levels within the system, such as peer groups and the formal administrative structure. Thus, we see that a paradigm begins on one level (in this case the individual level), and then tends to move outward in order to deal with the interrelationship between its focal area and other subsystems of the organization. This seems to be a general developmental characteristic of all organizational paradigms.

Social Process Paradigm Two:
The Sociotechnical

Users of the sociotechnical paradigm analyze the links between the "technological" and the "group" subsystems. The Tavistock Institute of England was a leader in developing this approach. A. K. Rice (1958), E. L. Trist et al. (1963), and other members of the Institute spent a great deal of time analyzing the technical requirements of industrial production and the group social processes that served as the human environment for the technological process. Their analysis of group processes in mining operations is a classic work connecting small-group processes to technology (Trist & Bamford, 1951).

Rather than using a mechanistic model, the sociotechnical theorists employ the organic image, for they are chiefly concerned about social

processes and the interrelationships between social systems. Although they are also concerned with problems of efficiency, they go beyond simple mechanistic interpretations to more sophisticated images of social process as it interacts with technological developments.

Social Process Paradigm Three:
Human Relations

The huge volume of work done within the human relations paradigm is well known and scarcely needs elaboration, for after the Hawthorne studies there were several decades in which human relations theory was organization theory as far as sociology was concerned. The works of Mayo (1933), Roethlisberger and Dickson (1939), Coch and French (1948), Lippitt (1958), and Dalton (1959) only begin a list that extends to scores. It is customary to lump the human relations theorists and the research listed above with the organizational psychologists; however, it seems important to keep them separate, and to show that the organizational psychologists are primarily concerned with individuals, whereas the human relations theorists are primarily concerned with groups.

By and large it seems reasonable to argue that the dominant human relations model is an organic one rather than a mechanistic one. The key points of analysis are social interactions and processes, the activities of peer groups, and the interaction between subgroup norms and the norms of the larger organization. Goals are multiple and are assumed to be more open.

Structural change processes in the organization as a whole are largely ignored by the human relations school, but some work has been done on the small-scale changes brought by interest groups (e.g., Selznick, 1949, Dalton, 1959) and by the "displacement of goals" that subgroups cause when they focus on their own goals rather than the overall system goals. But save for these minor exceptions, human relations theorists have never considered change dynamics in the whole system as important subjects for analysis. And because they are oriented almost exclusively to internal group processes, they have also ignored the larger social context of the organization.

The Open Systems Paradigms

The third group of paradigms uses Buckley's open systems model to analyze organizational dynamics. Actually only a few organization theorists have used this model, but Buckley suggests that it is becoming more influential and that future sociologists will use it more. In many respects the assumptions of open systems theory are not as clear as its proponents would have us believe, for it is still more of a promise and a set of potentially fruitful ideas than a well-articulated theory of social interaction. Nevertheless, certain premises can be suggested.

First, to the analysts using this theory the organization is not a bounded system isolated from its environment, but is instead open to influence from the surrounding society. The organization receives inputs, processes them, and then returns outputs to the society outside. There is a constant interplay between the organization and the environment.

Second, open systems theorists do not assume that goals are predetermined, as do both the rational theorists and the social process theorists. Instead, goals are considered to be unstable, changing, and subject to constant negotiation; moreover, they are assumed to be influenced by outside considerations as well as internal ones. Understanding goal indeterminacy becomes an important factor as organization theorists expand their horizons and begin to analyze organizations that have more diffuse, flexible goals, such as universities, research organizations, community action groups, and voluntary organizations.

Third, change and dynamism are central to the open systems perspective. Rather than assuming equilibrium or homeostasis--both assumptions that play down the role of change--the open systems approach has adopted a dynamic principle that Buckley calls "morphogenesis." Morphogenesis is the process by which a complex, adaptive system grows and changes in order to confront new goals and organize its efforts more efficiently.

Finally, open systems theory stresses the concept of "system," with parts interconnected in a dynamic whole. Actually, the open systems theorists have probably claimed more originality on that point than they deserve, for both the mechanistic and the organic models have always assumed a system of interacting parts in a complex whole. However, it is the open systems

theorists who have pointed out that the system assumption involves considerations of mutual feedback principles, constant change, and friction between the system and its environment.

Of the five subsystems outlined by Udy, only two (see Figure 2) have received significant attention from open systems theorists--technology to which operations research has made an important contribution in rationalizing work routines, and environmental relations.

Open Systems Paradigm One: Operations Research

An important group of theorists using the open systems model is the operations research, or "systems analysis," school. The advent of the high-speed computer and linear programming is at the root of this approach, for without these tools there would be no hope of handling the mass of details or the complex interrelationships that are necessary for successful operations analysis. The basic purposes and assumptions of the operations research school are fundamentally no different from those of the earlier technological efficiency school, since the same type of problem is taken as the prime focus. Yet, despite their similarities, there is more separating the two schools than simply the introduction of computers to do the computation. The critical difference is that the operations research paradigm is intended to unify discrete bits of information into a holistic view of the total work flow. Although the followers of Taylor and the scientific management school tried to solve the same type of problem, they were unable to conceptualize the task in an interconnected sequence, with processes tied to feedback cycles. The peculiar wisdom of the operations research paradigm has been to tie the same goal (efficiency of routine tasks) to a holistic intellectual framework (systems analysis) and to a very efficient tool (the computer). In this respect there is a qualitative distinction between the earlier technological efficiency approach and the modern operations research paradigm.

The usefulness of the operations research approach has been demonstrated on a number of complex administrative tasks, including public administration (Black, 1968; Morse, 1967; Peters, 1964), transportation systems (Carlin, 1968; Stanford Research Institute, 1968; Thomas, 1966), military hardware (Quade, 1964), and race relations (Finnie, 1969). Moreover, the PPB

(planning, programming, budgeting) movement has demonstrated the value of a systems approach for organizational planning, budgeting, and evaluation in a wide variety of contexts (for example, see Hyden & Miller, 1967). The demand for precise quantification has thus far limited the value of the operations research approach for nonroutine tasks, but there seems to be every possibility that in the future this framework will be applicable to highly sophisticated problems. (There is a developing body of theoretical knowledge and practical application in this area that is much beyond the scope of this paper. See Glans, 1968; Hare, 1967; Johnson, 1968.)

The chief aim of operations research seems to be rather narrowly focused on maximizing efficiency for the handling of routine, predetermined tasks. The initial determination of goals, the political decision making that determines priorities, and the environmental pressures that impinge on goal determination are all examples of the large-scale goal-determining activities that are simply taken as givens by the operations research school and not investigated. Moreover, in general the environment is taken for granted, and the basic task is the routinization of internal activities. In some instances the environment is specifically included in the operations research model, but primarily in its routine form (such as customer demand or competition with other firms), and rarely in its political form (such as interest groups, government regulatory agencies, or the struggle for survival between organizations). Finally, although some open systems theorists (the "environmentalists" discussed below) have studied change processes, there has been very little analysis of dynamics and change processes at the level of the technological subsystem. It is simply assumed that the organization exists in a certain way, that is isolated, that tasks are routine, and that goals are predetermined. With such a restrictive set of assumptions, it is no wonder that major changes in the organization are seldom considered in the operations research literature.

In short, the assumptions of the operations research paradigm are remarkably similar to the earlier, less sophisticated, technological efficiency approach. In fact, there is some question whether they should not be considered variations on the same theme. But the introduction of the systems imagery, the holistic view of the production processes, the feedback

assumptions, and the use of the computer as a methodological aid all seem to be major advances that justify regarding operations research as a separate approach.

Open Systems Paradigm Two:
The Environmentalists

The operations research analysts self-consciously depend on systems theory, but there is another group of theorists who use open systems perspectives without being specific about their framework. (This is certainly not unusual, for Buckley notes that most paradigms are unconsciously adopted and are used with little thought about their basic assumptions.) These theorists focus on the relations between organizations and their environments, and thus are called "environmentalists."

Talcott Parsons (1956) was one of the early users of the open systems approach to dealing with this issue. This is especially interesting because Parsons is the leading functionalist theorist, and the theoretical assumptions of the functionalist approach are usually considered to be exactly contrary to those of the open systems approach. Change processes are the primary concern of open systems theorists, whereas the functionalists have always been accused of ignoring change, transformation, and revolution. Nevertheless, many of Parson's concerns are clearly tied to an open systems framework. His study of the relations between the organization and the environment, through inputs and outputs, preceded most of the current rash of open systems discussions by a decade. Although Parsons rarely offers empirically testable propositions about the operations of organizations, he has always been a leading proponent of studying the impact of the environment on the organization, of studying the interrelations among parts of the system, and of viewing the organization as a holistic system bound together in one functionalist network. Parsons probably opened up the consideration of many of the prime issues being studied by those who criticize him today--although admittedly he ignored many others.

Other environmentalists have patterned their work on that of Philip Selznick. TVA and the Grass Roots (1949) is one of the most important research monographs dealing with the impact of the outside environment on the internal decision making of an organization. Burton R. Clark (1956, 1960) one of Selznick's students, carried these concerns over into his study

of the Los Angeles adult education programs and San Jose State College, in both cases stressing the environmental constraints that shaped, molded, and transformed the organization. In a similar vein, Baldridge (1971) consciously used an open systems perspective to study the environmental pressures shaping the destiny of New York University. Each of these writers used a single case study to delineate some of the environmental pressures impinging on an organization, some of the defensive postures taken by the organization, and some of the major consequences that followed.

Recently, several organization specialists have said to me that these studies seem "artificial" because they deal only with organizations that are already "in trouble" with their environments and thus their conclusions do not apply to normal, healthy organizations. Indeed, if one operates within a closed system paradigm, then external influences are "unhealthy" or "abnormal"; but if one functions within an open systems paradigm, then pressures from the outside are not only considered to be healthy and normal, but in fact are seen as the constant condition of dynamic organizations. Being "in trouble" with the outside environment is the universal condition of organizations that thrive, live, and interact with their social contexts.

Selznick and his followers used single case studies to outline the impact of the environment on the organization. Udy (1959b), by contrast, employed the Human Relations Area Files for a comparative analysis of the structure of work organizations in 150 preindustrial societies. He found that the relationship between the social context of an organization and its internal structural arrangements was very strong: organizations isolated from their environments developed highly rationalized and highly efficient operations, whereas organizations that were essentially "captured" by their environments (i.e. were subject to many outside pressures) exhibited low rationalization of work efforts. Diamond's (1958) study of the Colonial Virginia Company is a similar work that shows the linkage between the values of the community and the values of the company.

Other authors have considered the relations between organizations and their environments in a more theoretical manner. Emory and Trist (1965) outline some interorganizational dynamics; Thompson and McEwen (1957) offer a discussion of forms of organizational interaction; J. D. Thompson (1967)

offers the most sophisticated and complete treatment of the subject in recent years, using the systems approach; and Katz and Kahn (1966) also are using the systems approach.

All of these theorists hold in common the position that the organization is not an isolated, protected organism sealed off from its environment. They view the outside world as a critical determinant of the action and destiny of the organization. They define major environmental pressures and constraints, specify how these forces penetrate the organization's boundaries, and then characterize the reactions that the organization makes. In addition, they are the theorists most concerned with organizational change dynamics, for the pressures coming from the environment are a determinant of organizational transformations. No other theorists have offered as much information about critical shifts in an organization's values, goals, and structures. As Katz and Kahn note (1965, p. 451), environmental factors are probably the major promoters of significant organizational change. Since the environmentalists have been the most attuned to these issues, they have simultaneously been extremely sensitive to the dynamics of organizational change.

Comparing the Basic Paradigms

Now that each of the paradigms has been reviewed, an overall comparison may be helpful. Each of the paradigms has a set of problems that it claims as its special concern. It is important for organization theorists to understand what is and what is not included in the paradigm they have selected--or fallen into, as the case may be. Only as we understand the peculiar strengths and weaknesses of each framework can we begin to develop a multifaceted approach.

Figure 3 compares the rational paradigms, the social process paradigms, and the open systems paradigms. It ignores Udy's subsystems, but it is easy enough to remember that they cut across each of the three models.

From the discussion above, it appears that certain areas have been studied far more than others. To date, the technological subsystem has been at center stage, regardless of the social science model being used. Presumably this is because the practical technological problems of organizations have stimulated research that supposedly had immediate practical payoffs. The social process paradigm has been used a good deal at the group and individual level

	Rational System Paradigms	Social Process Paradigms	Open System Paradigms
Model	Mechanistic	Organic	Open Syst-
Physical Analogy	Machine	Organism	Cybernetic System
Research Focus	Efficiency	Social Interaction Among Peer Groups & Individuals	System Dynamics, Environmental Relations
Nature of Goals	Predetermined Large-scale Goals	Small scale Goals of Individuals & Groups	Open Goals
Source of Change	External Only	External Only	External/Internal
Dynamics Principles	Equilibrium	Homeostasis	Morphogenesis
External Environment	Minor Factor	Minor Factor	Critical Factor

Fig. 3. Comparison of three basic paradigms.

by sociologists and has commanded the attention of some of the best organization theorists. In both sociological interest and sheer volume of research, the study of peer groups, individual motivation issues, work incentives, and leadership training have dominated the organizational work of sociologists and social psychologists. The study of formal structural arrangements, an area pioneered by Weber, has been continued by several generations of theorists, but not as much work has been done as most writers seem to think.

Areas That Need Research

What are the directions that future research should take if conceptual gaps are to be closed? Despite the research of a handful of environmentalists, there is a major gap in our understanding of the relations between organizations and their environments. Certainly the current interest generated by open systems approaches seem to be stimulating more research in this area, but the surface has only been scratched. To date, organization theorists

have dealt chiefly with businesses ("inputs" of raw material and capital, and "outputs" of finished products) and educational institutions (organizations that are heavily dependent on their environments for support). In the future we must identify the primary relations between organizations and their environments, the nature of the influence processes in both directions, the types of boundary-spanning mechanisms that organizations develop, and the internal adaptations of organizations as they interact with their environments. Some of this research must certainly deal with interorganizational relations, since other organizations are significant elements in any organization's environment.

Organizational change processes on the large scale must be studied. Although there has been a significant tradition dealing with social processes, the work has been at the level of group interaction and individual motivations. In addition, the human relations school has always been concerned with change of a particular type, especially motivational change to improve morale, or to convince subordinates to accept changes desired by their superiors. What has been missing is the study of large-scale structural changes, major shifts in organizational goals, and transformations in the relations between organizations and their environments. Interestingly enough, the environmentalists have done the most research on the dynamics of change, presumably because they have not been as concerned with the internal activities that support current operations as they have been with external contingencies, which frequently transform organizations. In any event, we need fewer studies of current processes and more studies of the dynamic events--internal or external--that promote fundamental changes.

A third area for future research is "goal-diffuse" organizations. In the past, most research concentrated on organizations that had relatively specific, limited, well-articulated goals (e.g., "We run this organization for the profit of the stockholders"). To be sure, all organizational goals are diffuse to some extent, but there certainly are degrees of goal specificity, and relatively little is known about organizations toward the goal-diffuse end of the continuum: universities, public school systems, and social service agencies. It is likely that the decision-making dynamics of such organizations exhibit some interesting differences when compared with goal-specific organizations, chiefly because their goals tend to be more flexible, more contested, more conflicting--in short, more "political"

than "bureaucratic." Of particular value would be studies comparing the policy-formulating dynamics of goal-diffuse and goal-specific organizations.

In sum, an investigation of the conceptual gaps left by the commonly used paradigms suggests three subjects that are ripe for further research: environmental and interorganizational relations, major change dynamics, and goal-diffuse organizations. In addition, several changes will be needed in traditional theoretical and methodological approaches. Organization theory is particularly prone to loose, descriptive statements that are conceptually thin. Because they are required to couch their theories in language easily understood by managers--often the men who are paying for the research--organization theorists tend to avoid abstract formulations in favor of vivid detail and example. The desire for a quick payoff--not an unworthy goal in itself--has often meant that matters of long-range theoretical import have been neglected.

Theoretical shortcomings can, to a considerable extent, be charged to methodological deficiencies, in particular to reliance on the case study. This is not surprising, since using the organization as a unit of analysis presents monumental methodological problems. Moreover, the "action" orientation of many organization theorists tends to make them interested in the day-to-day workings of particular organizations. And it must be admitted that the case study technique has served us well, illuminating numerous details, planting the seeds of progress, and offering opportunities for detailed analysis; but despite these virtues, the case study is at least partially responsible for the lack of theoretical sophistication in organizational research. When concerns are practical, and when the focus is on a single case, then the result is often a low level of abstraction and a neglect of rigorous, interconnected theoretical propositions that apply to different kinds of organizations.

Among the procedures that may lead to theoretical sophistication, experiments and comparative analyses seem especially valuable. Although the gap between the experimental condition and the "real" world cannot be ignored or argued away, the experiment nevertheless does hold some possibilities for the study of certain internal dynamics. The systematic comparative approach seems to be even more promising for establishing a set of interrelated propositions and testing them in many different settings under widely

varying circumstances. In this way, insights provoked by case studies can be expanded, systematically linked with other propositions, and analyzed in comparative perspectives.

Conclusion

Organization theory, like other areas of social science, depends on basic theoretical paradigms that define problems, suggest methodologies, and limit the researcher's focus. These paradigms can be compared and contrasted on the basis of organizational subsystems and basic social science models. One result of the comparison is that we see several theoretical gaps: the relations of organizations to their environments, the dynamics of change on a large scale, and the policy-formulating processes of goal-diffuse organizations. The statement of areas that need to be studied leads to a statement about how the work should be done--in particular, that more rigorous abstract theorizing about systematic interrelations of organizational properties is needed. To accomplish this, there must be a methodological framework that allows for systematic comparative analysis.

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